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Abstract.

«Radiation monitoring and remediation of the territories in the Russian Federation contaminated as a result of the Chernobyl accident ».

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As a result of the Chernobyl accident, 19 constituent territories of the Russian Federation were contaminated with Cs-137 at the levels above 1Ci/km^2 (37 kBq/m^2). As of 1986, the total area in these constituents with the mentioned contamination levels was 65050 km^2 . The predictions made in 1998 regarding possible changes in the extent of contamination due to radioactive decay showed that by 2010 the contaminated area would be 31120 km^2 , decreasing twice over 20 years. All settlements occurring on the territories with Cs-137 levels lower than 1 Ci/km^2 (37 kBq/m^2) were surveyed to determine more accurately the levels of radioactive contamination. The results of the calculations and surveys suggested that 4911 settlements were contaminated with Cs-137 at the levels more than 1 Ci/km^2 (37 kBq/m^2) in the mid-1986, whereas by 1 January 2010as a result of radioactive decay 2977 settlements remained contaminated, which is 39% lower as compared with 1986. For all settlements it was also calculated when these settlements can be transferred from one zone of Cs-137 contamination to the next one as a result of radioactive decay. As shown by the calculations, the contamination levels above 40 Ci/km^2 (1480 kBq/m^2) will disappear in 2020, above 15 Ci/km^2 (555 kBq/m^2) – in 2063., above 5 Ci/km^2 (185 kBq/m^2) – in 2110, above 1 Ci/km^2 (37 kBq/m^2) – in 2180.

The worst contaminated area in Russia as a result of the Chernobyl accident is the Bryansk region. We are providing information about the contamination of the near-surface atmosphere and water bodies there. In Bryansk the volumetric activity from 1987 to 1995 decreased by an order of magnitude, varying insignificantly during the following 15 years within $1\text{-}3\cdot 10^{-6}\text{ Bq/m}^3$. This value is 7 orders of magnitude lower than the permissible volumetric activity for the population set by the Standards of Radiation Safety (NRB-99/2009).

In the settlement Krasnaya gora, in which the Cs-137 contamination level is close to 5 Ci/km^2 (185 kBq/m^2), the levels being much higher in the neighborhood, the Cs-137 fallout levels decreased by 2 orders of magnitude over 5 years since 1986 and was changing insignificantly up to 2001, with a further decrease by 5 times by 2010 The radioactivity accumulation on the soil due to atmospheric fallout over 24 years was 11.5 kBq/m^2 , which is 6,2 % of the initial contamination.

The water bodies of the Bryansk region were also studied in detail for radioactive contamination. The results of these studies indicate that the contamination levels in the rivers flowing through the contaminated parts of the Bryansk region and in the wells located in the most contaminated settlements (Kozhany, Nikolaevka, Zaborie) are 2-3 orders of magnitude lower than the intervention level specified by NRB-99/2009 However, the contamination levels in those water bodies that have no outflow, upstream of the above mentioned settlements (lake

Kozhankvskoe, Svyatoye on the Besed) are close to or exceed the intervention levels. In these lakes the Cs-137 contamination levels in fish were also found to be fairly high and exceed the permissible levels by 1-2 orders of magnitude.